

WHAT IS CLAIMED IS:

- 1           1.       A method, comprising:  
2           requesting, by a network storage driver, a connection from an offload application,  
3           wherein the offload application interfaces with a first network stack implemented in an  
4           operating system and a second network stack implemented in a hardware device;  
5           receiving the connection from the offload application, wherein the received  
6           connection is an offloaded connection and is reserved for the network storage driver; and  
7           communicating data over the offloaded connection through the hardware device.
- 1           2.       The method of claim 1, wherein communicating the data over the  
2           offloaded connection further comprises:  
3           sending the data directly from the network storage driver to a hardware driver for  
4           the hardware device, wherein the network storage driver uses the second network stack  
5           implemented in the hardware device to communicate with a storage area network.
- 1           3.       The method of claim 1, further comprising:  
2           releasing the offloaded connection to the offload application, wherein the  
3           offloaded connection is no longer reserved for the network storage driver.
- 1           4.       The method of claim 1, further comprising:  
2           receiving the request for the connection at the offload application;  
3           generating, by the offload application, the offloaded connection;  
4           reserving, by the offload application, the offloaded connection for the network  
5           storage driver; and  
6           sending the offloaded connection to the network storage driver.
- 1           5.       The method of claim 1, wherein the connection is a Transmission Control  
2           Protocol / Internet Protocol connection included in a file descriptor sent from the offload

3 application to the network storage driver, and wherein the file descriptor includes a port  
4 address that is reserved for the network storage driver.

1 6. The method of claim 1, wherein the network storage driver implements an  
2 Internet Small Computer Systems Interface protocol for communicating with a target  
3 storage device through the hardware device.

1 7. The method of claim 1, wherein the first network stack and the second  
2 network stack do not implement an Internet Small Computer Systems Interface protocol.

1 8. The method of claim 1, wherein the first network stack and the second  
2 network stack comprise an Internet address family and a Transmission Control protocol  
3 implemented over an Internet Protocol network layer, wherein the offload application can  
4 offload a network communication request to the second network stack in preference to  
5 the first network stack, and wherein a single stack behavior is maintained by the first and  
6 second network stacks to applications and network management utilities.

1 9. The method of claim 1, wherein the hardware device is a Transmission  
2 Control Protocol offload engine adapter, and wherein a network communication request  
3 for communicating the data is processed faster in the second network stack in comparison  
4 to the first network stack.

1 10. A system, comprising:  
2 a processor; and  
3 program logic including code that is capable of causing the processor to be  
4 operable to:  
5 request, by a network storage driver, a connection from an offload  
6 application, wherein the offload application interfaces with a first network stack

7 implemented in an operating system and a second network stack implemented in a  
8 hardware device;  
9 receive the connection from the offload application, wherein the received  
10 connection is an offloaded connection and is reserved for the network storage driver; and  
11 communicate data over the offloaded connection through the hardware  
12 device.

1 11. The system of claim 10, wherein the program logic is further capable of  
2 causing the processor to be operable to:  
3 send the data directly from the network storage driver to a hardware driver for the  
4 hardware device, wherein the network storage driver uses the second network stack  
5 implemented in the hardware device to communicate with a storage area network.

1 12. The system of claim 10, wherein the program logic is further capable of  
2 causing the processor to be operable to:  
3 release the offloaded connection to the offload application, wherein the offloaded  
4 connection is no longer reserved for the network storage driver.

1 13. The system of claim 10, wherein the program logic is further capable of  
2 causing the processor to be operable to:  
3 receive the request for the connection at the offload application;  
4 generate, by the offload application, the offloaded connection;  
5 reserve, by the offload application, the offloaded connection for the network  
6 storage driver; and  
7 send the offloaded connection to the network storage driver.

1 14. The system of claim 10, wherein the connection is a Transmission  
2 Control Protocol / Internet Protocol connection included in a file descriptor sent from the

3 offload application to the network storage driver, and wherein the file descriptor includes  
4 a port address that is reserved for the network storage driver.

1 15. The system of claim 10, wherein the network storage driver implements  
2 an Internet Small Computer Systems Interface protocol for communicating with a target  
3 storage device through the hardware device.

1 16. The system of claim 10, wherein the first network stack and the second  
2 network stack do not implement an Internet Small Computer Systems Interface protocol.

1 17. The system of claim 10, wherein the first network stack and the second  
2 network stack comprise an Internet address family and a Transmission Control protocol  
3 implemented over an Internet Protocol network layer, wherein the offload application can  
4 offload a network communication request to the second network stack in preference to  
5 the first network stack, and wherein a single stack behavior is maintained by the first and  
6 second network stacks to applications and network management utilities.

1 18. The system of claim 10, wherein the hardware device is a Transmission  
2 Control Protocol offload engine adapter, and wherein a network communication request  
3 for communicating the data is processed faster in the second network stack in comparison  
4 to the first network stack.

1 19. A system, comprising:  
2 a computational platform;  
3 a storage controller implemented in the computational platform;  
4 a processor coupled to the computational platform;  
5 an offload adapter coupled to the computational platform; and  
6 program logic including code that is capable of causing the processor to be  
7 operable to:

8 request, by a network storage driver, a connection from an offload  
9 application, wherein the offload application interfaces with a first network stack  
10 implemented in an operating system and a second network stack implemented in the  
11 offload adapter;  
12 receive the connection from the offload application, wherein the received  
13 connection is an offloaded connection and is reserved for the network storage driver; and  
14 communicate data over the offloaded connection through the offload  
15 adapter.

1 20. The system of claim 19, wherein the program logic is further capable of  
2 causing the processor to be operable to:  
3 release the offloaded connection to the offload application, wherein the offloaded  
4 connection is no longer reserved for the network storage driver.

1 21. The system of claim 19, wherein the program logic is further capable of  
2 causing the processor to be operable to:  
3 receive the request for the connection at the offload application;  
4 generate, by the offload application, the offloaded connection;  
5 reserve, by the offload application, the offloaded connection for the network  
6 storage driver; and  
7 send the offloaded connection to the network storage driver.

1 22. An article of manufacture, comprising a storage medium having stored  
2 therein instructions capable of being executed by a machine to:  
3 request, by a network storage driver, a connection from an offload application,  
4 wherein the offload application interfaces with a first network stack implemented in an  
5 operating system and a second network stack implemented in a hardware device;  
6 receive the connection from the offload application, wherein the received  
7 connection is an offloaded connection and is reserved for the network storage driver; and

8           communicate data over the offloaded connection through the hardware device.

1           23.     The article of manufacture of claim 22, wherein the instructions are  
2 further capable of being executed by a machine to:  
3           send the data directly from the network storage driver to a hardware driver for the  
4 hardware device, wherein the network storage driver uses the second network stack  
5 implemented in the hardware device to communicate with a storage area network.

1           24.     The article of manufacture of claim 22, wherein the instructions are  
2 further capable of being executed by a machine to:  
3           release the offloaded connection to the offload application, wherein the offloaded  
4 connection is no longer reserved for the network storage driver.

1           25.     The article of manufacture of claim 22, wherein the instructions are  
2 further capable of being executed by a machine to:  
3           receive the request for the connection at the offload application;  
4           generate, by the offload application, the offloaded connection;  
5           reserve, by the offload application, the offloaded connection for the network  
6 storage driver; and  
7           send the offloaded connection to the network storage driver.

1           26.     The article of manufacture of claim 22, wherein the connection is a  
2 Transmission Control Protocol / Internet Protocol connection included in a file descriptor  
3 sent from the offload application to the network storage driver, and wherein the file  
4 descriptor includes a port address that is reserved for the network storage driver.

1           27.     The article of manufacture of claim 22, wherein the network storage driver  
2 implements an Internet Small Computer Systems Interface protocol for communicating  
3 with a target storage device through the hardware device.

1           28.     The article of manufacture of claim 22, wherein the first network stack  
2     and the second network stack do not implement an Internet Small Computer Systems  
3     Interface protocol.

1           29.     The article of manufacture of claim 22, wherein the first network stack  
2     and the second network stack comprise an Internet address family and a Transmission  
3     Control protocol implemented over an Internet Protocol network layer, wherein the  
4     offload application can offload a network communication request to the second network  
5     stack in preference to the first network stack, and wherein a single stack behavior is  
6     maintained by the first and second network stacks to applications and network  
7     management utilities.

1           30.     The article of manufacture of claim 22, wherein the hardware device is a  
2     Transmission Control Protocol offload engine adapter, and wherein a network  
3     communication request for communicating the data is processed faster in the second  
4     network stack in comparison to the first network stack.